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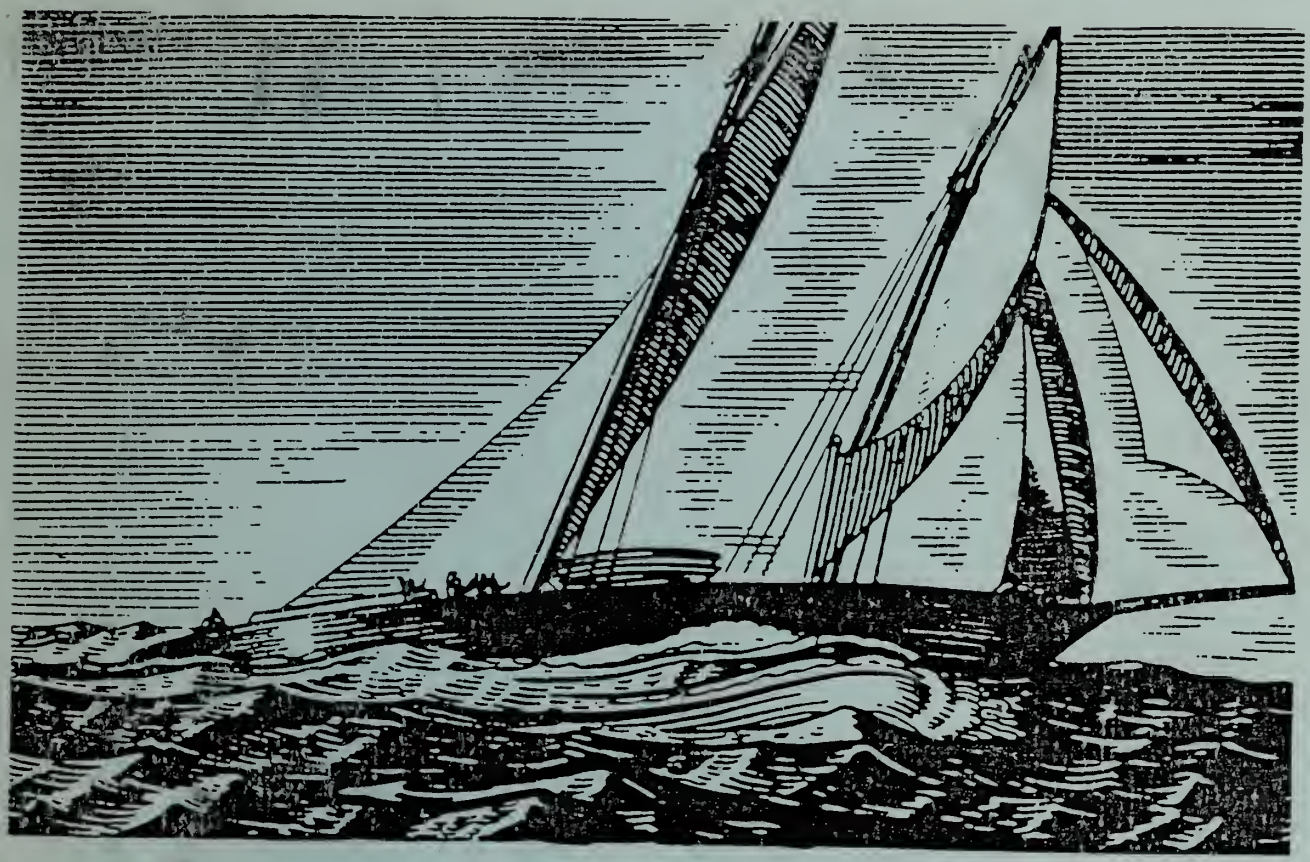
Schooner *Ernestina* Seamanship Manual



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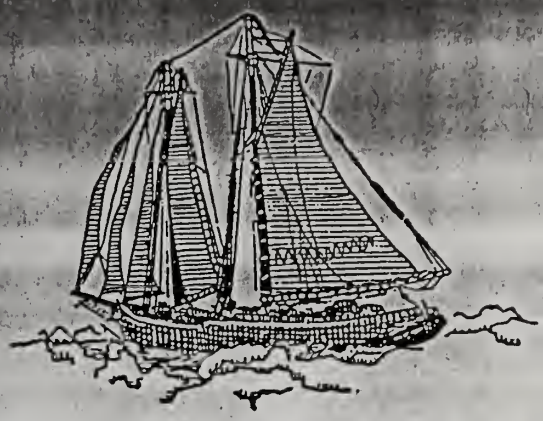
Schooner *Ernestina* Seamanship Manual



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This manual belongs to:

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The Schooner *ERNESTINA* is owned by the Commonwealth of Massachusetts and operated by a Commission. The Commission is a nine member agency of the Commonwealth of Massachusetts enabled by legislation found in Chapter 6 of the General Laws signed by Governor William Weld January 13,1994. The Commission is placed in the Department of Environmental Management and includes designees of Commissioner Peter Webber of DEM, Commissioner Robert Antonucci of the Department of Education and Ms. Mary Jane McKenna, Director of Office of Travel and Tourism and six other residents of the Commonwealth of Massachusetts. The commissioners are appointed by the governor to govern the operation of the U.S. Coast Guard inspected 156' gaff rigged Grand Banks fishing Schooner *ERNESTINA*.

Schooner *Ernestina* Commission
P.O. Box 2010
New Bedford, MA 02741-2010
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Welcome aboard the Schooner Ernestina

You are now stepping aboard a ship that is a survivor. She has preserved her crew for hundreds of thousands of miles during more than a century of work and exploration. As you come aboard and throw your energy together with others to travel out to sea, you should know that you will inevitably leave some of your soul behind walking the deck, and take something as equally powerful with you.

As a member of the crew aboard *Ernestina* you will come to know the wind and water; you will discover a new world. You will come to appreciate more the hard-won knowledge of sailors past as you take your place as a sailor upon the sea.

Take pride in the accomplishment of a job well done, take heart in the bond of shipmates as you share in the exhilaration of confronting all weather and take time to reflect as you stand the early dawn watch or gaze up into a star filled night that stretches from horizon to horizon.

Welcome Aboard! Let's haul away together!

Fair winds,

Gregg H. Swanzey
Master, Schooner *Ernestina* ex-Effie M. Morrissey

Schooner *Ernestina*: History Under Sail

by Captain Daniel Moreland
Reprinted from *Sea History* Magazine, Winter 1987-88

The reasons for saving an historic artifact often have less to do with its design or use than with the human story behind it. Mount Vernon might have been important architecturally, but it stands today because it was George Washington's beloved home. The USS *Constitution* may have been a splendid frigate, but she was saved - and saved again - because her exploits during the War of 1812 stirred the American spirit when little else could. The same is true of the schooner *Ernestina*, ex-*Effie M. Morrissey*, a veteran of the Grand Banks fishing fleet, of Arctic gales and the hot dusty winds of the Sahara in the grueling Cape Verde packet trade. The *Ernestina*'s story is not that of some curious relic brought out of obscurity and preserved by virtue of her longevity. She started out pretty well known, and then she became famous.

In 1894 the United States was prosperous, expanding and naive. The popular notion in the gay nineties was that everything was great and things would stay that way - maybe even get better. The Civil War was a long time in the past and planned obsolescence and European wars that would strip us of our innocence were a long time in the future. Ships then were built to last, with heavy frames, heavy long planks and a pride of craftsmanship not just good enough to sell but good enough to brag about to your fellow craftsmen. The shipwrights of Essex, Massachusetts, where the *Ernestina* was built as the *Effie M. Morrissey*, strove to outdo each other just for the sake of it. This competitive edge certainly contributed to her durability. But it was also reported in her day that her skipper, William Morrissey, one of the older highliner skippers, built her more expensively and strongly than usual. She had lots of knees: hanging knees under every full deck beam and lodging knees throughout, and no butt joints in the foredeck planking. Full length planks of quarter-sawn old growth hard pine in excess of thirty feet ran from the break of the poop all the way forward to meet the margin plank as it curved in at the bow.

Not only was there strength, there was refinement. Although it was painted over in later years, her after cabin was paneled in brightly varnished birdseye maple and black walnut, pretty fancy stuff for a prosaic fishing boat. And she was built with other details that make one wonder: the underside of the deck planks are hand beaded, even in the fish hold.

The *Morrissey* exemplified the best of the *Fredonia*-type Gloucestermen - the finest working fore-and-aft sailing vessels - with a design that felicitously combined speed, carrying capacity, maneuverability, sea kindliness and elegance in a balance that is rarely achieved. Although later extreme schooners were often faster, the *Morrissey* and her sisters were regularly capable of twelve-to-fourteen knots, and it is recorded that the *Morrissey* herself once made sixteen knots in 1912, when

veteran fishermen were calling her "an old plug." Under ideal conditions, she can still sail within forty-five degrees of the direction of the wind, and she can hold at fifty-five degrees most of the time.

As a fisherman, she was also known for her capacity. She typically brought in excess of 200,000 pounds of fish. This was due in part to the fact that she gave up no space for an auxiliary engine. A large catch for modern draggers of comparable size is under 100,000 pounds because so much of their carrying capacity is taken up by the engine room. She is also sea kindly. I have never been so comfortable at sea. As the fishermen used to say, "She shames the gulls."

In 1914, the *Morrissey* was purchased by Harold Bartlett who sailed her in Newfoundland and Labrador with general cargo and coal; occasionally she would sail the fishing banks. Harold Bartlett was the uncle of Captain Robert Bartlett, the Anglo-American explorer who had sailed with Robert Peary and Vilhjalmur Stefansson on a number of their expeditions to the Arctic. In 1926 he acquired the *Morrissey* from his uncle and began sailing her in annual expeditions to the Arctic and Greenland.

The first published feature story about the *Morrissey* was an amusing account of a voyage between Portland, Maine and Yarmouth, Nova Scotia, in December 1912 by the Canadian maritime historian Frederick William Wallace.

The *Morrissey* served as a platform for a *National Geographic* article about the Grand Banks fisheries in 1922, and she was the subject of another *National Geographic* piece about the Bartlett expeditions published in 1946. If you paid a nickel to see matinee pictures in the 1930s, as often as not the film of your choice was preceded by a Pathe News Reel about Captain Bartlett and his "little *Morrissey*," inspiring youth to adventure and popularizing the pursuit of science by telling about his trips to the north. Bartlett and his ship were probably as well known in their day as Jacques Yves Cousteau and the *Calypso* are today.

But reading any of Bartlett's numerous accounts, one realizes that his trips were not some gentleman's yachting trip but bang-up voyages to the unforgiving Arctic reaches. Descriptions of groundings, fog, ice and completely uncharted waters with terrific currents made his voyages of exploration as informative and exciting as those undertaken earlier by Captain Cook or Roald Amundsen. His twenty voyages in the *Morrissey* sponsored by the Smithsonian, the American Museum of Natural History, the US Navy and Vassar College, among others, were not simply stunts for the record books, but honest efforts to gather artifacts and information. Bartlett gathered zoological specimens, completed coastal and hydrographic surveys,- sometimes with deep-sea wire sounding equipment, and sometimes with the *Morrissey*'s keel - and made valuable ethnological recordings. The Peary-McMillan Arctic Museum has 110 reels of 16mm film recording Inuit dances and folkways all taken on expeditions in the 1920s.

Although during World War II the *Morrissey* had been kept in good repair by the Brooklyn Navy Yard between trips as a supply vessel for the US Navy, there was not much use for a 120-ton, 52-year-old wooden sailing ship in post-war America. On the death of Captain Bartlett in 1946, she was offered to Mystic Seaport, but they were not in a position at that time to take on the challenge of maintaining such a ship. She was purchased by a group of ex-Navy men who painted her white in anticipation of sailing her in the South Pacific, but she burned at Flushing, New York, and was only saved by being intentionally sunk. With their enthusiasm for sailing the old schooner dampened, her owners sought a new buyer.

In 1948 she was purchased by Captain Henrique Mendes, a seaman and entrepreneur from the island of Brava in the Cape Verde archipelago some 300 miles off West Africa. The islands have strong ties to New England which date back to the heyday of whaling in the nineteenth century.. Through the 1800s, Cape Verdeans had been working on American whaling ships, and many had settled in southeastern New England to work in the maritime industries that flourished there.

Regular traffic in immigrants to the United States and general cargo to the islands developed. In about 1902, Captain Mendes bought his first ship and started out in this trade. With the help of his sister, who was an American citizen and could own a vessel with American registry, Captain Mendes bought the *Morrissey* and took her to New Bedford, in the heart of the American Cape Verdean community. There he repaired her fire damage, put a galley on deck and entered the immigrant trade with his new vessel, which he named the *Ernestina* after his daughter. Although 300 years separated the two ventures, *Ernestina* was carrying on essentially the same work as had the *Mayflower*, and in conditions which bore striking similarities to those of the earlier ship. Mendes removed the engine to meet obscure laws of maritime commerce, and she sailed with neither radar nor radio on board. But for the Cape Verdean community, it still made sense, in the middle of the twentieth century, to make their trip to the New World under sail. And the *Ernestina* sailed between Providence and the islands until Mendes retired from the sea in 1965, at the age of eighty-six.

The *Ernestina* tried to revive the immigrant trade in the 1960s, but steamship competition was too stiff, and little was heard about her until 1976 when the newly independent Republic of Cape Verde decided to refit her so she could participate in Operation Sail 1976. En route to New York she was disgusted, but the following year the Cape Verdeans decided to give the ship to the United States. Thanks largely to the efforts of the Cape Verdean community in New Bedford and throughout New England, under the sponsorship of the National Maritime Historical Society, she was returned to the United States in 1982. The *Ernestina* then underwent an extensive four-year refit, which ended in time for her to sail in Operation Sail 1986, the Statue of Liberty centennial. She was unique in the parade of ships as the only vessel to have actually carried immigrants to this country. And in 1987 she received the National Trust for Historic Preservation's Preservation Honor Award.

First Thoughts

When the day finally arrives and you step aboard the *Ernestina*, stand for just a moment. View your surroundings. Try to remember your first impressions of sight, sound, and immediate feelings. Then save those impressions for comparison with what you feel as you step off the ship at the end of your voyage.

The crew will be busy and occupied working about the ship. If you are not noticed right away, please step forward and introduce yourself. A crew member will take you below decks and show you to your bunk. You will have the opportunity to stow your gear, change clothes, if necessary, and then report back on deck. Departure days at the beginning of a program are always busy and, since you are now a member of the ship's company, your assistance will be needed.

When all of your fellow shipmates are on board, the entire ship's company will be mustered on deck for a formal introduction of the ship's officers and crew. At this time, the students will be divided into three watch groups. You will tour the ship with your watch officer and learn the business of the various areas on the ship, safety issues and the location of safety equipment, and sail and helm commands. Seamanship principles and practices will be introduced then and repeated through the trip.

Life on Board

The Chain of Command

The Captain is ultimately responsible for the safety of everyone on board the ship. Therefore, he or she must also carry the ultimate authority. Imagine if every one of your shipmates did whatever they felt like...one might steer north, one might steer south, one might decide to set all sails, while another might set no sails at all. To avoid such chaos, the Captain is in charge and "the Captain is always right." Don't worry, this does not mean that the Captain will storm about the deck in a thundering rage if his geraniums aren't watered! That false impression is cast by Hollywood and it is better left there. Professional mariners know that respect goes both ways.

The Captain's representatives are the three Mates. They carry out the Captain's orders and update the Captain on the progress and condition of the vessel. The Mates are assisted by the Deckhands. It is the Mates who will most likely be giving you the orders and who will be your mentors in seamanship training.

The Watch System

There are three "watches." A watch consists of a group of students, a Deckhand and a Mate who is the watch officer. They work together to run the ship for set periods of time each day. There are three watches. A normal watch schedule rotates as follows:

Watch 1	12am to 4am	0000 to 0400
Watch 2	4am to 8am	0400 to 0800
Watch 3	8am to 12pm	0800 to 1200
Watch 1	12pm to 4pm	1200 to 1600
Watch 2	4pm to 6pm	1600 to 1800
Watch 3	6pm to 8pm	1800 to 2000
Watch 1	8pm to 12am	2000 to 0000

This cycle continues and comes around to repeat itself every three days.

Standing Watch

Standing watch aboard ship is not an idle pastime. You will be given significant responsibility at times, so your time on watch should be approached with a serious attitude. For those four hours, all of the normal responsibilities of running the vessel will fall to your watch group. The duties you perform rotate on a half-hour and daily basis. They include:

Helm — In this position, the student has the responsibility for steering the vessel on a specific course or to varying commands. (See "Helmsmanship" section)

Lookout — The lookout is the eyes of the ship and is required by international law. The ocean and horizon are not empty spaces, so it is your duty to alert your Watch Officer or Captain to whatever you see. (See "Lookout" section)

Boat check — The boat checker's duty is to monitor the ship's systems on a regular basis and look for possible hazards around the ship. The person will check engines, batteries, lights and bilges and report their condition to the Watch Officer.

Idlers — These are any members of the watch who are not currently involved with the specific duties described above. You are not truly "idle," however, you may be washing decks, tending sails, mending rigging, studying navigation or taking scientific observations.

Galley duty — We can not expect the cook to make great meals and do all our dishes, too. Everyone takes a turn helping in the galley.

All Hands

Most of the normal ship operations can be managed by a single watch. Exceptions to this occur when we are setting or striking all sail, getting under way, anchoring, mooring and (of course) in emergencies. These are referred to as "all hands" maneuvers. If the call goes out for all hands and you are off watch, it is vital that you immediately leave what you are doing (even sleeping) and report on deck without delay.

Helmsmanship

If you are nervous about your first "trick " at the wheel, that is okay. Do not ever lose that respect for the responsibility of steering the ship. You will probably have trouble at first, everyone does, but do not give up. Let the ship teach you how to steer by watching it react to your efforts. Remember, you are steering the ship, not the other way around. You will always be steering according to "helm orders," which will be a compass course.

The proper procedure to use when you are reliving someone at the wheel is described as follows:

You say: **"Here to relive the helm."**

They reply: **"Ordered course is 1,6,0."** (Example number)
Compass courses are always given in three digit numbers. For example, due east, or 90 would be reported as 0,9,0. (0 is said "zero," "o" is a letter.)

You reply: **"Course is 1,6,0, Aye."** You should not accept the wheel until the vessel is on course.

If you are the one relieved from the helm, you report this to the Watch Officer.

You say: **"Helm relieved at 1,6,0."**

It is likely that there will be occasions when you are not steering a set compass course, such as when the ship is transiting a canal, coming to a dock or anchorage, or experiencing shifting winds. In these cases, you will be given specific commands. These commands should be repeated so that the Mate or Captain know they have been heard.

These commands might be:

"Come up"	Steer closer to the wind.
"Fall off"	Steer farther away from the wind.
"Steer full and by"	This means to steer as close to the wind as you can while keeping the sails full and the ship moving.
"Port (or Starboard) (number of turns)	Turn the wheel the stated number of turns and hold it there.
"Midships"	Return the wheel to midships from wherever it is.
"Steady as she goes"	Note the compass heading or an object at which the ship is pointed and hold that course.
"Hard starboard (or port)"	Turn the wheel all the way in the desired direction.
"Shift your helm"	Turn the wheel the same amount, but in the opposite direction from the last stated command.
"Port (or starboard) easy"	Turn the wheel just enough to cause the ship to turn slowly in the desired direction.

Occasionally, for navigational purposes, you will be asked what your compass heading is, or what it is supposed to be. Be honest and do not confuse the two.

"What is your heading?"	What does the compass read at the moment?
"What is your course?"	What have you been told to steer?

Lookout

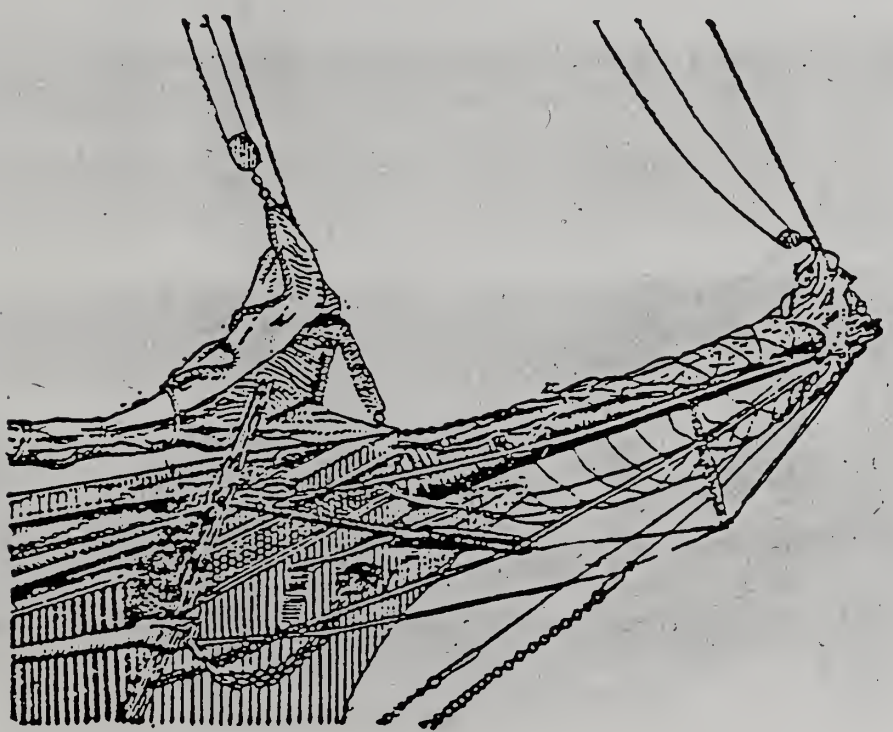
The ship's lookout is a position required by international law. Although the ocean may appear empty, it is, in fact, a very busy place. The responsibility of the lookout is to stand near the bow of the ship to spot and report all objects or lights that they see. This is extremely important, because the Captain and Mates at the stern of the ship have limited visibility and may be involved with other business.

When you spot an object, it must be reported immediately to the Watch Officer. Do not take the time to identify the object first, that is the Officer's job, and you may be wasting valuable time. When you report a sighting, you need to be able to tell the Officer in which direction and how far away the object lies. Something more definite than "over there" is obviously needed. We use the point system for reporting which helps the Watch Officer look immediately towards the object. A single "point" is equivalent to 11 1/4 degrees of the compass. (see the "Point System for Lookouts" diagram in the back of the manual)

Anchor Watch/Dock Watch

Even though the ship may seem secure when at anchor, she still needs to be looked after. Anchors occasionally drag and mooring lines can chafe through or require tending due to the tides. The batteries and the bilges also need to be watched and a fire watch must be maintained.

Anchor watch is usually stood by one or two people for one hour slots. You will have to read and be responsible for the Captain's night orders and the standing orders. These are important responsibilities, and should be approached no differently than a normal watch. Remember, the rest of your shipmates will be sleeping and relying on you. Remember, too, that they will appreciate your efforts to be quiet.



Conservation of Resources

Think of the ship as a very small version of the planet in that we have a finite supply of our valuable resources. When the *Ernestina* leaves port, there is an ample amount of fuel, food, and water aboard but we can not afford to waste them. The word sharing will take on a significance that you may never have appreciated before.

Water

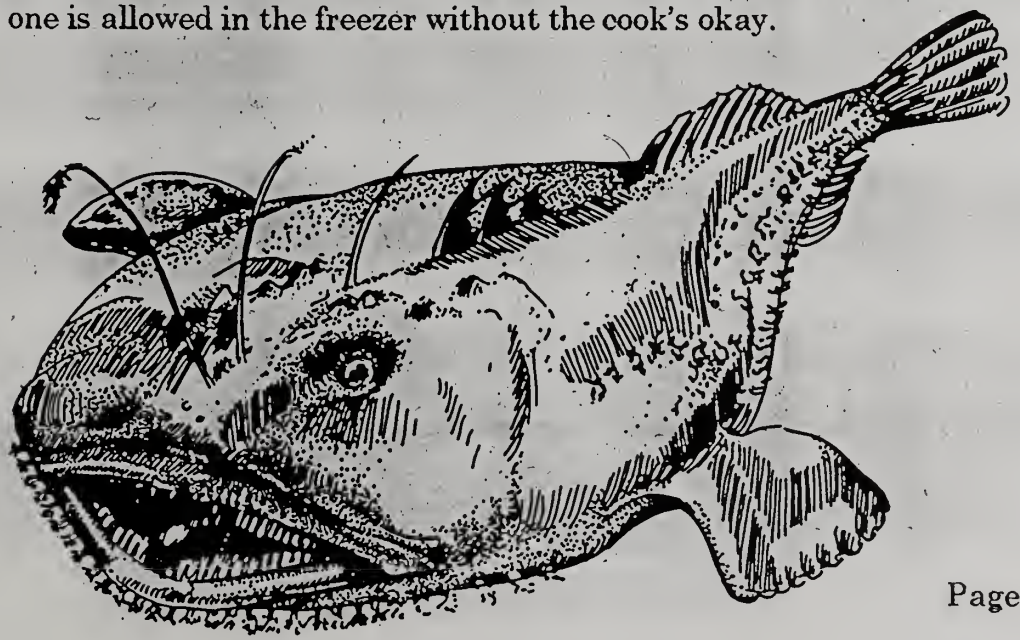
- No resource is more valuable at sea than fresh water
- Use water only for drinking, cooking and brushing teeth
- Freshwater showers are not allowed while at sea
- If you pour it, drink it!

Food

- Meals will be served 3 times a day
- Take a reasonable amount of food on your first time through the line. Remember there are others behind you. There will be plenty for seconds if you want them
- Snacks and communal food will be put out by the cook, so please do not help your self to anything else
- The cook leaves port knowing exactly how much food is aboard and how it will be rationed to complete the voyage. If everyone were to just help themselves, the cook would soon lose track and there would be danger of running short
- If it is on your plate, eat it. Please do not waste food

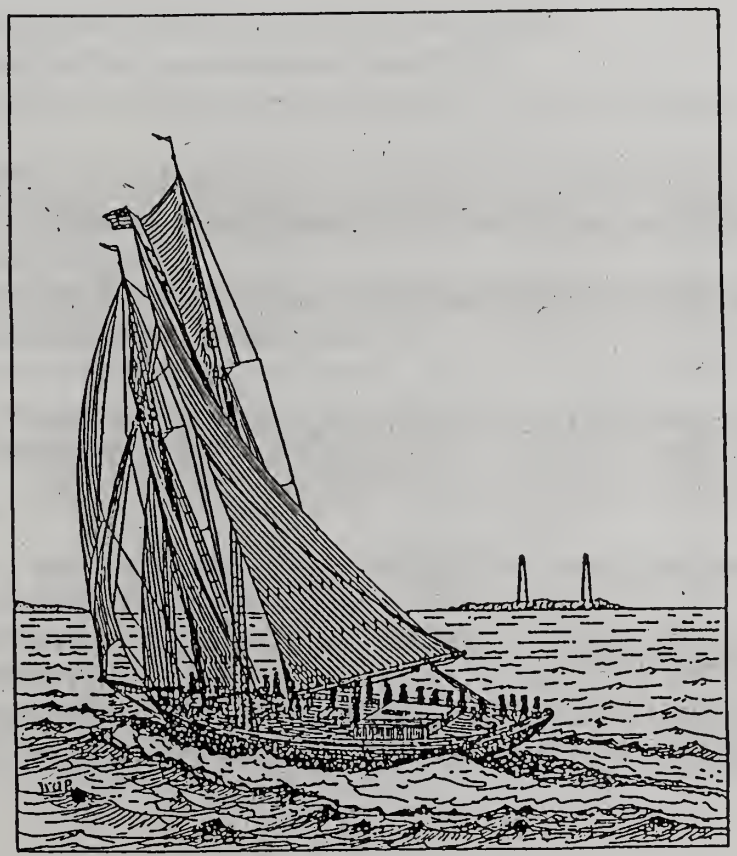
Fuel/Electric

- We leave port with enough fuel, but none to waste
- Electricity is stored in batteries. When these are depleted they must be recharged by the diesel generator. This not only uses up valuable fuel, but is noisy
- Turn lights off when you are finished using them
- Turn off lights which you see are not in use, even if you did not turn them on
- No one is allowed in the freezer without the cook's okay.



Tips for Shipmates

- Consideration of your shipmates and a willingness to pull your weight are essential in tight quarters and close community of a sailing ship.
- Stow personal gear properly. Loose gear on deck or below is a hazard. (See "Clothing and Equipment List")
- Report for watch 5 minutes or more before the change. This is a consideration which you will appreciate at 0400.
- Do not whistle, scream or yell without good reason. The Mates and Captain must be able to tell when an authentic emergency exists.
- Talk softly and walk quietly on deck, on ladders and down below. Remember, someone has just gone to sleep.
- The quarter deck of the ship is not for socializing. It is the center for conducting important vessel operations. Stay off the quarter-deck if you do not have business there.
- Do not leave your position without being properly relieved.
- Do not stand or sit in companionways or on ladders.
- Do not go aloft or on the bowsprit without permission.
- Do not shine flashlights at people. This will ruin night vision when it could be critical
- Remember, you may only have this experience once. Make the very most of it and give it your best effort.



Safety

The safety and preservation of the ship is of the utmost importance. If people are careless, the ship can be a dangerous place. No amount of rules or protective equipment can replace caution and common sense. The *Ernestina* crew members are chosen for their experience and skill, so listen to their advice and commands. Also, make sure to read and follow the general orders set by your Captain. Our goal is to prevent all injuries and accidents, but everyone must help.

The following is a description of the safety issues which will be discussed in detail during your orientation. Constant attention to these rules and guidelines will ensure that you leave the ship in the same condition that you boarded it.

Falling Overboard

- You are always far better off on board the ship than in the water, so don't fall overboard!
- Do not sit on the rail
- Keep to the windward side of the ship while underway
- Always get permission from the officer on watch before going aloft or out on the bowsprit
- Notify the officer on watch when you come on deck and before going below at night
- Keep one hand for the ship and one hand for yourself

Other types of falls

- Always proceed below decks facing the ladder
- Hold tight to the grab rails and handholds
- When going or working aloft, only hold on to the standing rigging

Line Handling

- Lines under stain can cause serious personal injury or damage to the ship if handled improperly.
- Never cast off a line until you understand the stain it is under.
- Assume all lines are under stain.
- Keep your hands away from blocks, pins, and cleats when handling a line.
- Do not step on a loose line or in a coil of line. The line can roll out from under you or snag your foot in a bight.

Engine Room

- Be aware and stay clear of hot manifolds and machine parts. Never grab ahold of something without looking first.
- Be aware of rotating machinery and belts. Keep body, clothes, hair and jewelry clear of these.
- Always wear hearing protection when machinery is running.
- Do not leave oily rags in engine room, except in designated bin.

Galley

- Never leave sharp objects out where they can slide or roll. Remember that the ship moves.
- Pots of hot liquid should be on the stove secured by fiddles or in the sink. If they slide, they will spill and cause serious burns.

Smoking

- Smoking is never permitted below decks. Ever!
- Smoking is not permitted for students.

General

- Bare feet are not allowed, except when swimming.
- Long hair should be braided or tied back.
- Jewelry, especially rings or long dangly earrings, should be removed.

Emergency Procedures

Emergencies at sea are even more urgent than on land. We can not dial 911. There are no ambulances, fire departments, plumbers, or mechanics. We must be prepared to deal, by ourselves, with any emergency that befalls us. You will each have a job to do in a given emergency situation, and you cannot hope that when the time comes, the right answers and actions will "just come" to you. For this reason, we must regularly practice the procedures in response to emergencies.

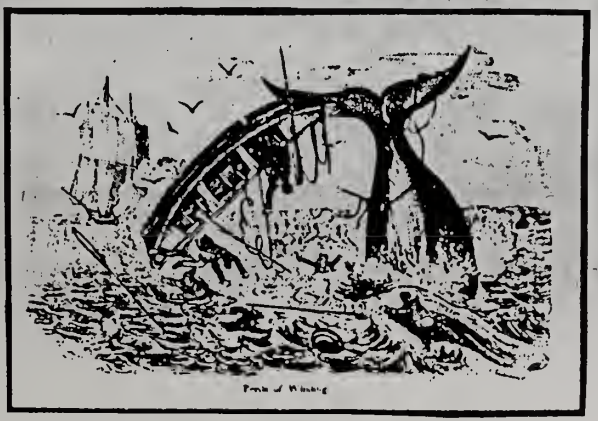
Just what can endanger a sailor at sea? There are many things, most of which can be guarded against by normal maintenance and regular observations of the ship's systems. One of the most serious emergencies is fire, because it directly threatens all of our support systems for existing at sea. Another emergency that is just as serious is a person overboard. Other serious emergencies include flooding, loss of steering, rig failure or collision.

There are three basic emergency responses for which we regularly drill: fire fighting, person overboard recovery, preparation to abandon ship. The signals which are given to indicate each of these situations are as follows:

Fire/emergency:	This is indicated by a steady sounding of the ship's alarm for a period not less than 10 seconds.
Person overboard:	A soon as this situation is seen or discovered, the cry "Man overboard" is given, along with the side of the ship from which it occurred. This is passed verbally and supplemented by a series of short blasts on the ship's alarm.
Abandon Ship:	This consists of 6 short blasts followed by a long blast of the ship's whistle. The action will not be taken without the explicit command of the Captain or next highest in command.

Dismissal from Emergency Stations is signaled by 3 short blasts followed by 3 short rings of the bell.

Upon hearing any of the above calls or alarms, you should immediately leave what you are doing and muster on deck amidships. Do not hesitate. Your life, the life of a shipmate and/or the ship itself may depend on you. Read the emergency station bill (posted in all compartments aboard ship) and know your duties for these emergencies.



Small Boat Operations

Proper small boat operation has long been considered an essential aspect of seamanship. Before the days of the outboard motor, all boat handling was accomplished under sails or oars. The efficient and safe operation of a boat was always dependent on the skill of the seamen. Small boats were often launched at sea, with considerable waves running, to convey a message or individual from one ship to another. Harbor pilots were brought up to the towering sides of merchant ships and passenger vessels in a very small boat, so that they could climb up the ship's side to guide her into port.

The *Ernestina* carries nested dories just as she did in days when she fished the Grand Banks. You will gain a great deal of insight how a boat maneuvers from the time you spend in these small craft. Our boats can be a lot of fun, but they must be operated with safety in mind. Be careful climbing in or out of the boat when alongside the ship. Always remember to keep your fingers clear from the gun'ls when alongside, wear your life jacket and ask permission from the Mate on watch before you take out any boat.

Clothing and Equipment List

The items on this list are not strict requirements, but are highly recommended and, in some cases, essential for your comfort.

Clothing

- Jeans: several pairs for work
- Shorts and T-shirts: also for work
- Warm clothes: wool sweater, long sleeve shirt, windbreaker jacket It can get chilly at sea at night, even in the summer.
- Soft-soled shoes (two pair) and socks (plenty)
- Hat: with a visor to keep sun off.

Please note: Clothes aboard the ship get dirty and often permanently stained. Also, clothes get wet, even through foul weather gear, so bring extra. However, don't bring too much, because storage space is limited.

Special Equipment

- Sea bag or duffel bag as luggage. Hard suitcases are not allowed. (All your gear should fit into one bag)
- Flashlight
- Work Gloves

Other

- Sea boots and foul weather gear (jacket and pants)
- Sleeping bag (a pillow with pillow case will be provided)
- Towel and face cloth
- Personal hygiene materials
- Extra pair of eyeglasses if you wear them. Also sunglasses are recommended for everyone.
- Seasick medication (see seasickness section)
- Sunscreen

What not to Bring

- Alcohol and illegal drugs are not allowed
- Radios, personal stereos and boom boxes are not allowed. (But non-electric musical instruments are enthusiastically encouraged)

Seasickness

Most everyone experiences seasickness at the beginning of their trip. In many cases it goes away, but in some instances it lasts longer, so we urge you to take precautions. We recommend that you bring Dramamine or Bonine, and note that in order to be effective it must be taken well ahead of time. If you are prone to motion sickness, you should consult with your physician to get a prescription for something stronger.

If you do feel sick, an important thing to do is keep eating and drink plenty of water so that you will not dehydrate. Also, if you keep busy it will keep your mind off of your stomach.

Drugs

- Illegal drugs will not be tolerated on board the Schooner *Ernestina.*
- To use drugs aboard ship or while involved in a program is to physically endanger yourself, your shipmates and the ship.
- The *Ernestina* is subject to boarding and inspection by US Coast Guard, US Customs and other authorities. The possession, transportation or use of drugs by anyone aboard could result in fines and imprisonment of the Captain and the offenders, as well as confiscation of the vessel.
- All crew are subject to pre-employment testing for use of illegal drugs. They, and you, may be subject to post-accident or probable-cause testing.
- The Captain has the right to search the belongings of any individuals suspected of violating this rule.
- Any participant found in violation of these policies will be put ashore at the first available port. There will be no discussion, no apologies and no second chances. Neither tuition nor program fees will be refunded.

Alcohol

- The use of alcohol underway is prohibited.
- The use of alcohol by people of legal age is allowed ashore.
- Drinking prior to scheduled watch is prohibited. Even mild intoxication makes you a hazard to yourself and your shipmates.

GLOSSARY OF NAUTICAL TERMS

Abaft:	Behind. (The cabin is abaft the main mast.)
Abeam:	A position that is at right angles with the keel.
Adrift:	Broken loose from its mooring, cleat, etc.
Aground:	When the ship's keel is touching the bottom.
Ahead:	In front of the ship.
Aft:	Towards the stern.
Amidships:	The middle of the ship. Midway between the bow and stern.
Astern:	Behind the ship.
Auxiliary:	A sailing vessel that has an engine is said to have "auxiliary" power.
Back Stay:	Lines fixed at the top of a mast that lead aft and down to the sides of the ship.
Baggywrinkle:	Old cordage that is wrapped around the standing rigging to prevent chafing of the sails and spars.
Beam:	Width of a vessel at the widest point.
Beam Reach:	Sailing with the wind 90 degrees to the longitudinal axis of the ship.
Beam Sea:	Seas running perpendicular to the longitudinal axis of the ship.
Beat:	To work to windward by tacking.
Before the Wind:	To sail with the wind from astern.
Belay:	To secure a line to a cleat or pin.

Belaying Pin: A wooden or iron pin to which lines are made fast (secured).

Below: Beneath the decks. One never goes "downstairs" on a ship.

Bend: To tie two lines together.

Bend On: To secure a sail to a boom or spar.

Bilge: Lowest, inside part of the hull where water collects.

Binnacle: The housing that contains the compass.

Bitter End: The extreme end of a line or chain.

Bobstay: Chain/stay that leads from the bowsprit to the stem.

Bolt Rope: Rope sewn around the edges of a sail to give it strength.

Boom: Large spar to which the foot of a sail is secured. (See "Sail Plan")

Bow: Forward end of the ship.

Break: Area where the raised quarter deck begins and main deck ends.

Brightwork: Woodwork that is kept varnished.

Bulkhead: Any partition or wall aboard a ship.

Bulwarks: Sides of a vessel that extend above the deck.

Cast Off: To let go. Depart.

Cat-head: A timber projecting outboard from a vessel, used for drawing up the anchor clear from the ship's side.

Caval Cleat/Kevel: A large wooden cleat attached to the bulwarks for securing heavy lines.

Chafe:	Wearing of the sail cloth or part of the rigging due to rubbing and friction.
Chafe Gear:	Canvas or old cordage used as protective gear to minimize chafe.
Chain Lockers:	A locker in the foredeck where anchor chains are stowed.
Chain Plates:	Bands of iron, bolted to the outsides of the hull, to which the lower ends of the shrouds and stays are attached.
Charley Noble:	The stack on the galley stove.
Chock:	A jaw-like fitting attached to the cap rail to give lines a fair lead.
Chronometer:	A precision time piece set to Greenwich Mean Time (G.M.T.)
Cleat:	A horned metal or wooden piece to which lines are secured.
Clew:	Lower, outboard or aft corner of a sail.
Close Hauled:	Sailing as close to the wind as possible.
Close Reach:	Sailing with the wind forward of the beam and sails slightly eased.
Coaster:	Schooner working in the coastal trade.
Come About:	To bring the vessel from one tack to another, with the bow crossing through the wind.
Companionway:	Hallway or ladder passage aboard the ship.
Cowl Vents:	Vents designed to ventilate below deck areas.
Cringle:	A ring sewn in a sail through which a line may be passed.
Danforth:	A patented anchor that utilizes design rather than weight for holding power.

Davits: A pair of heavy spars projecting over the stern or sides of a vessel to raise a boat out of the water.

Dead Ahead: Directly in front of a vessel.

Deckhouse: Cabin that projects above deck.

Depthsounder: Measures the depth of the water beneath the keel. (Also called a fathometer.)

Deviation: Effects that magnetic materials aboard a vessel have on the ship's compass, calibrated at different headings.

Dismast: To lose or break a mast.

Displacement: The weight of the water displaced by the hull.

Dolphin Striker: A short, downward spreader. The top is secured to the bowsprit, while the lower end is attached to the jibboom martingale stays. Also called a martingale.

Dorade Box: A small box on the deck to which a cowl vent is attached. It prevents sea water from going below decks.

Down East: From New York to Canada, along the coast. Sailing coasters have always been bound "down east" when headed toward Maine and Nova Scotia. The most common explanation of the term is that the winds are generally more favorable for a ship headed in that direction, going down wind.

Down Haul: A line used to pull a sail down.

Draft: The distance the hull projects below the water's surface.

Ease Away: To slack a line slowly.

Ensign: The national flag.

E.P.I.R.B: Emergency Position Indicating Radio Beacon. This beacon can be activated manually or is automatically activated if the vessel should sink. It broadcasts over the frequencies used by commercial airlines.

Fake:	One circle of a coil of line.
Fall Off:	Steering the ship so that the wind comes more from astern.
Fathom:	A measurement of six feet.
Fid:	A cone-shaped, wooden pin used to separate strands of line for splicing.
Fife Rail:	A pin rail that encircles a mast.
Fish Hook:	A large iron hook used to raise the anchor to the cat head.
Flake a Line:	To coil down a line or chain on the deck so that each fake overlaps the one underneath. The line is then clear for use.
Following Sea:	Swells, or seas, that approach a vessel from the stern.
Foot Block:	Blocks attached to the deck. Halyards run down through these blocks and are then secured to a pin.
Fore and Aft:	Parallel to a ship's longitudinal axis (the keel).
Fore Deck:	Forward part of the deck, where the crew works with the staysail and windlass.
Fore Sail:	The sail attached to the forward mast. (See "Sail Plan")
Fore Staysail:	The head sail forward of the Fore Sail. (See "Sail Plan")
Fore Peak:	The compartment below decks at the bow.
Forward:	Toward the bow.
Foul:	When something is jammed or not running free.
Freeboard:	The distance from the waterline to the deck or gunwale.
Furl:	To gather up and secure the sail after it has been dropped.
Gaff:	The spar to which the head of a gaff-headed sail is bent.

Galley:	The ship's kitchen.
Gasket:	Short piece of line used to secure a sail to the boom after it has been furled.
Ground Tackle:	Catch-all term for anchors, chains, etc.
Gunwale:	The upper edge of a vessel's side.
Gybing:	To bring the wind to the other side of a ship by bringing the stern through the wind.
Halyard:	A line used to raise sails.
Haul:	To pull on a line, such as a halyard.
Hawser:	Another name for a line used for towing.
Hawse Pipe:	A steel-encircled hole in the bow planking, through which the anchor chains pass.
Head:	A ship's toilet and bathroom.
Head Sea:	When swells, or seas, approach a vessel head on.
Heel:	When the wind pressure causes a vessel to lean to one side.
Helm:	Steering apparatus of a ship, such as a tiller or wheel.
Helmsman:	The person who is steering a vessel.
Hull:	The body of a ship.
Hull Down:	Said of a vessel when, due to its distance, only the masts are visible on the horizon.
In A Vessel:	Among seamen, no one ever sails "on" a vessel or even "aboard" a vessel, they are <u>in</u> a vessel. They are only <u>aboard</u> when a vessel is at anchor or a wharf.
Inboard:	Toward the fore and aft center line of a ship.

In Company: When two or more vessels are sailing within sight of each other, they are said to be in company.

In Irons: When a vessel is stuck between tacks and the sails are luffing.

Irish Pennant: An untidy loose end of line.

Jaws: The forward end of the gaff or boom that forms a semi-circle around the mast to keep it in place.

Jib: A triangular head sail. (See "Sail Plan")

Jibboom: The spar which extends forward atop the bowsprit to which the tack of the jib is secured. (See "Sail Plan")

Keel: The principle longitudinal timber or backbone of a vessel.

Ketch: A sailing vessel in which with the main mast is tallest and foremost. The second mast (called the mizzen) is shorter and forward of the rudder post.

Kingspoke: The upper spoke of a ship's wheel, when the rudder is amidships. It is marked with a turks head.

Knighthead: Timbers projecting upwards through the deck on either side of the bowsprit.

Lay: The direction of the spiral in a multi-stranded line.

Lazarette: Crawl space located beneath the quarter-deck which is entered through a hatch.

Lazy jacks: Lines that run vertically from the boom to the quarter lifts to keep the sail on the boom while it is being lowered.

Lead line: A line used for sounding water depth.

Lee helm: Tendency of a vessel to fall off the wind.

Leeward: The direction towards which the wind blows.

Lee way:	Drift to leeward.
L.O.A.:	Length overall.
Lubber line:	A mark on the foreward point of the compass, to show the helmsman how the compass is pointing.
Luff:	When the sails flutter because the ship is sailing too close to the wind.
L.W.L.:	Length at water line.
Main Sail:	The largest, after most sail on a two masted schooner (See "Sail Plan").
Main Sheet:	Line which controls the lateral motion of the main sail.
Make Fast:	The act of belaying, or securing, a line to a cleat or pin.
Marline Spike:	Long metal spike of hardened steel to aid in splicing and seizing rope or wire.
May Day:	International distress signal that is repeated three times.
Monkey's Fist:	A ball made of cordage used to weight the bitter end of a heaving line.
Nautical Mile:	Equal to 6,076 feet or 1.15 statute miles.
Oil Skins:	Foul weather gear.
Oily:	Referring to bad weather and seas.
Outboard:	Toward the side of a vessel, away from the center.
Outhaul:	A line attached to haul the fore staysail out on its traveler.
Painter:	A bow line on a small boat.
Peak:	The upper, after end of a gaff rigged sail.
Pinch:	To sail closer to the wind than is most efficient.

Pin Rail: A rail where belaying pins are found.

Point: Eleven and one quarter degrees on the compass.

Port: The left side of a vessel, when you are facing forward.

Preventer: A line or block and tackle which prevents a boom from swinging free.

Quarter: The aft "corners" of the vessel, between abeam and astern.

Quarter Lifts: Support lifts on each side of the sail running from the mast head to the boom.

Quarter Deck: The raised afterdeck of a vessel.

Rake: The inclination of a ship's masts, either forward or aft from a perpendicular line.

Ratlines: Footlines on the shrouds.

Reach: Sailing with the wind abeam.

Reef: To shorten, or reduce the size of a sail, usually done because of heavy winds.

Reef Points: Short pieces of line attached to the sail used for reefing.

Rode: Any anchor line or chain attaching the anchor to the ship.

Running: Sailing with the wind astern.

Running Rigging: Movable rigging, such as sheets, halyards etc., as opposed to standing rigging (which does not move).

Samson Post: A large timber on the foredeck for securing lines.

Scope: Length of anchor rode, from the hawse pipe to the anchor, in relation to the depth of water, expressed as a ratio.

Scupper: Openings in the bulwarks to drain water from the decks and waterways.

Seize:	To attach something by lashing it with line or wire.
Sheet:	The line that controls the lateral movement of the sail.
Shrouds:	Standing rigging that that suports the masts laterally.
Sloop:	A sailing vessel with one mast.
Slush:	To grease the masts.
Spar:	Wooden poles which the sails are secured to. Can be masts, booms, yards, or gaffs.
Springstay:	Fore and aft stay the mast heads.
Standing Rigging:	Any rope, wire, or chain that does not move and whose functions it is to support the masts, bowsprit, etc.
Starboard:	The right side of a vessel, when you are facing forward.
Stem:	A piece of timber which rises from the fore part of the keel to form the bow.
Step:	To set a mast in place.
Stern:	The after end of a vessel.
Stern way:	To move in reverse.
Sway:	When hauling a line, one crew member pulls sideways (or sways) so that the line can be hauled up easier.
Sweat:	To haul on a line.
Swinging Room:	The radius from anchor to stern of ship.
Tack:	To bring the wind to the other side of the ship by bringing the bow through the wind. Also, the lower forward corner of a sail.
Tackle:	A line run through blocks to gain mechanical advantage. (It is pronounced "Tay-kle".)

Taff Rail: Rail around the quarter deck.

Tail: To take in the slack, while another person sways on a line.

Tender: A service skiff.

Throat: Forward end of the gaff, and the related corner of the sail.

Thwart: The seat in a skiff or dory.

Tons (or Tonnage): A volume measurement based on an arbitrary formula, intended originally to be a rough measure of a ship's cargo capacity.

Topping Lift: A line running from the mast head to the end of the boom to raise and lower the boom.

Top Sail: A sail set from a top mast. Also called a gaff top sail. (See "Sail Plan")

Topsides: Part of the hull that is above the waterline.

Transom: The flat part of the stern.

Trick: The period of time or act of being at the helm ("A trick at the wheel").

Two-blocked: When the two blocks of a tackle are hauled up tight to each other.

Unbend: To untie.

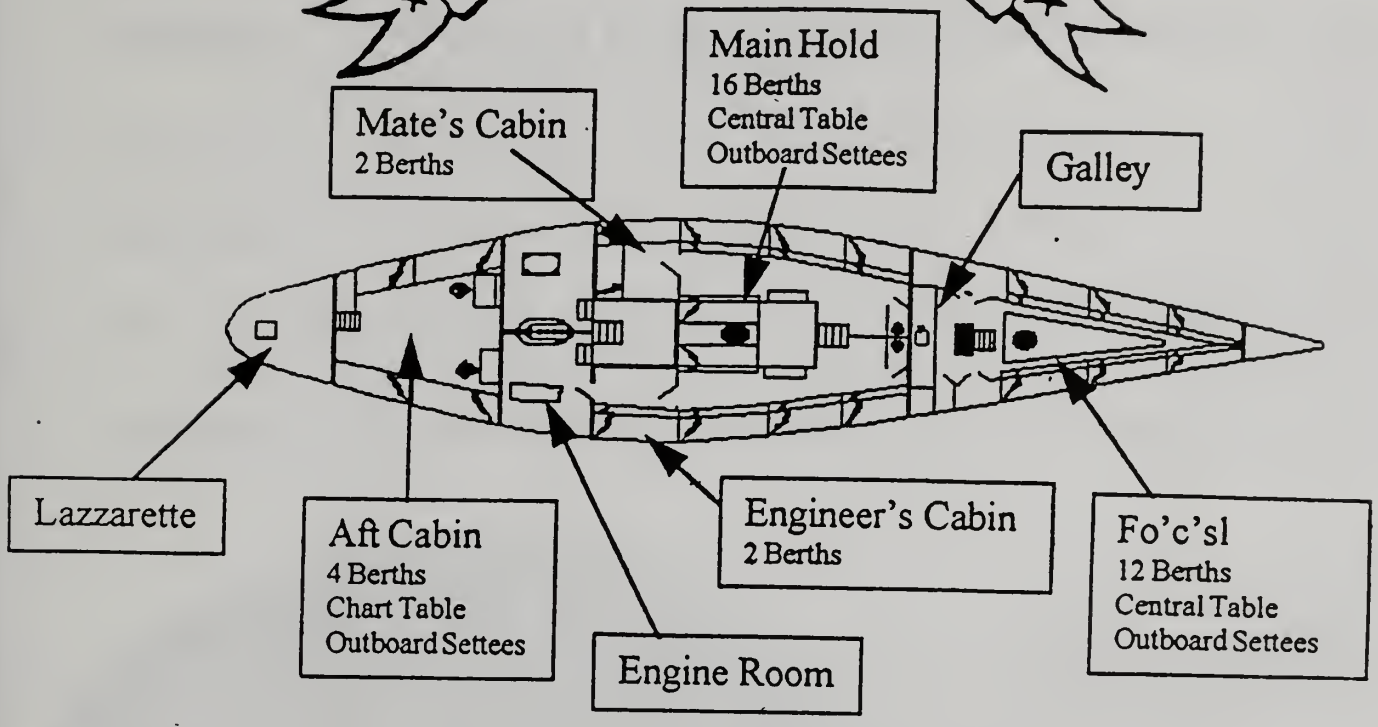
Variation: The angle between the magnetic north pole and the geographic north pole.

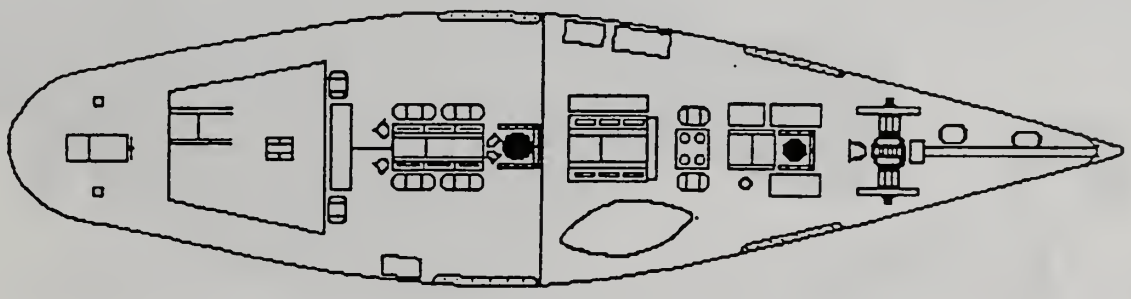
Voyage: No coasting schooner makes a coastal voyage. She makes a trip or passage. She may make a voyage to the West Indies and back, but many hands and skippers would still refer to it as a trip.

Waterway: Areas around the perimeter of the deck used to drain a vessel's decks.

SCHOONER

ERNESTINA



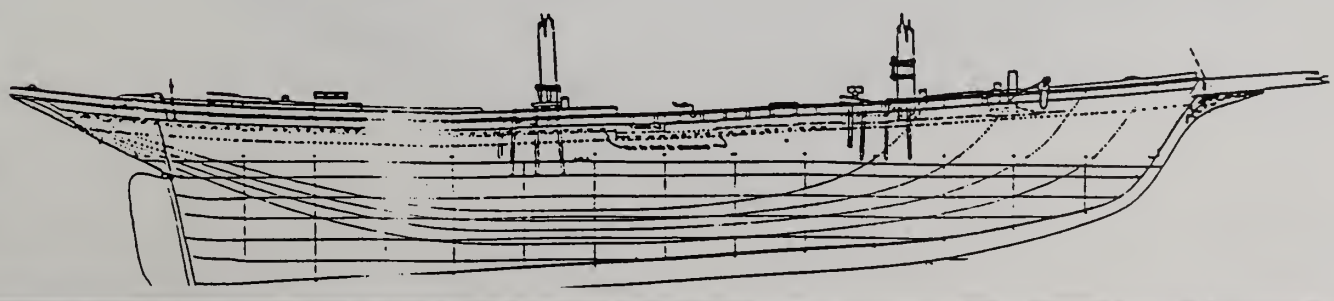


Statistics

Sparred Length Overall:	156 ft.	Displacement:	240 Tons
Length at Waterline:	93 ft.	Designer:	George M. McClain
Beam:	24 ft. 5 in.	Builders:	James & Tarr Shipyard
Draft:	13 ft.		Essex, Massachusetts
Gross Tonnage:	98 Tons	Launched:	Feb. 1, 1894

*

Onboard Educational Staff:	12
Capacity for Social & Civic Events	up to 80 persons
Educational Day Programs:	up to 65 participants
Overnight or Multiday:	up to 24 participants



Weather Helm: The tendency for a vessel to head into the wind.

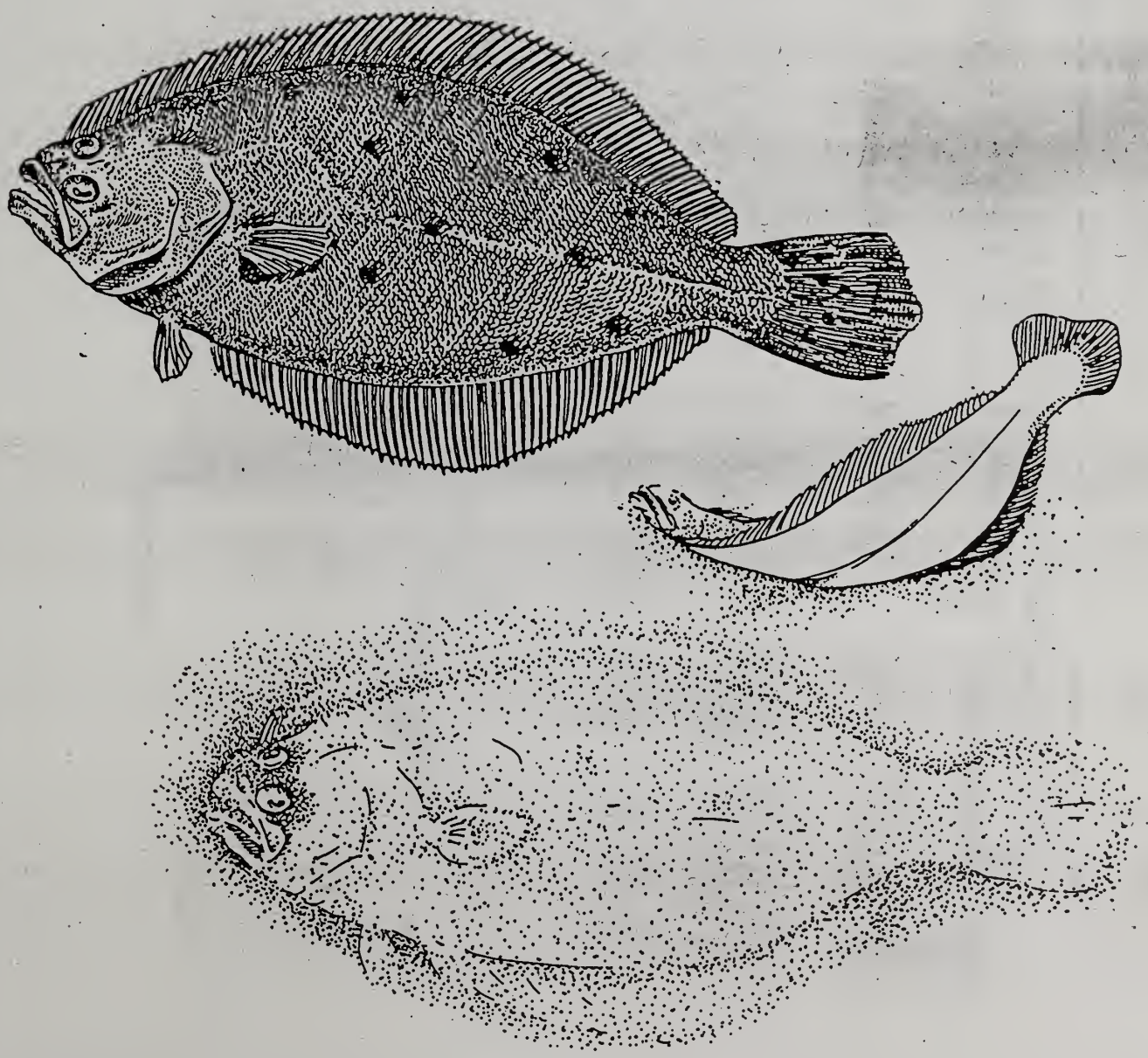
Whipping: A method of sewing sail twine on the end of a line to prevent it from unraveling.

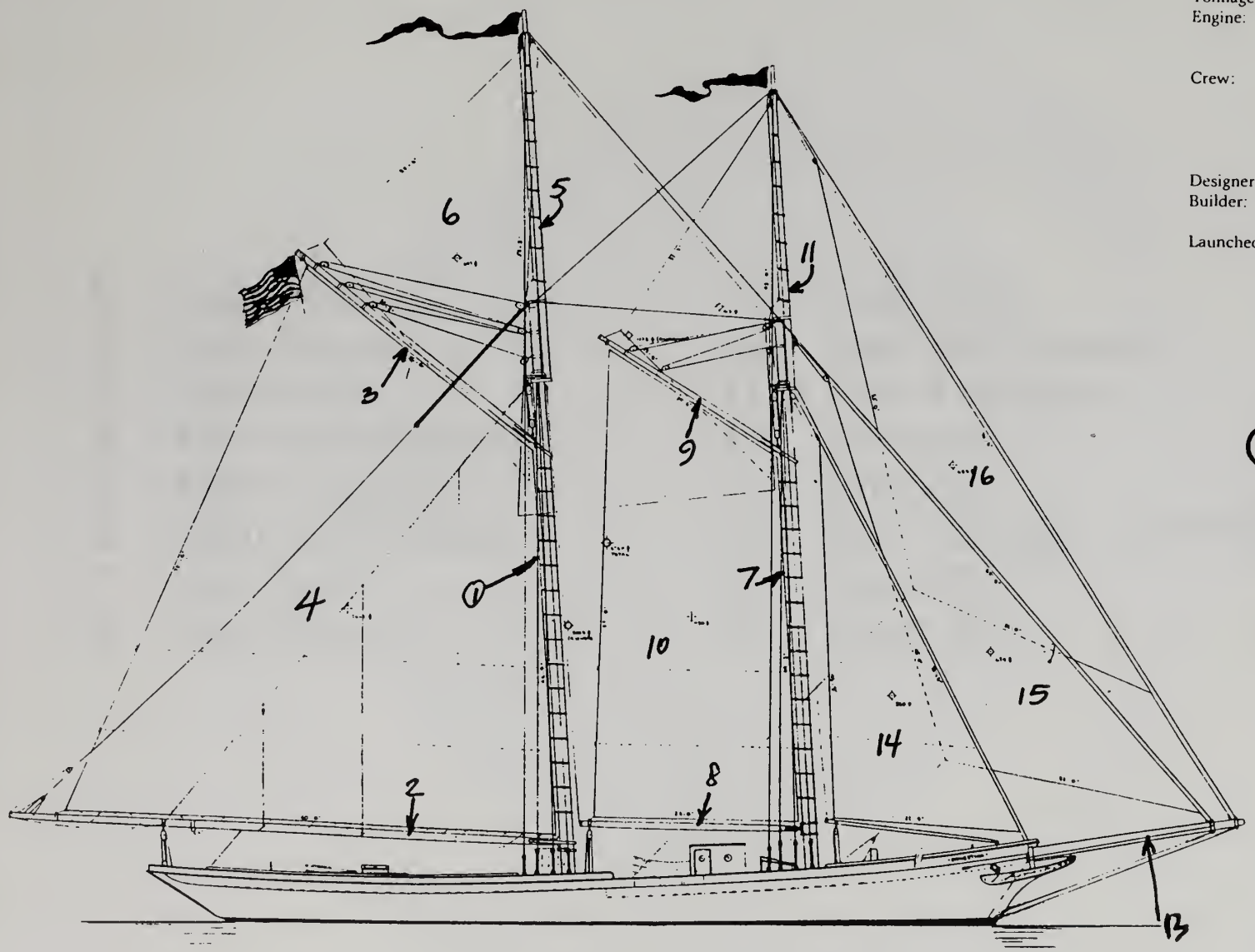
Windlass: A device for heaving in the anchor and chain.

Windward: The direction from which the wind is coming.

Yawl: Rigged like a ketch except that the mizzen is placed aft of the rudder post.

Yawl Boat: A small inboard craft used to push or tow a larger vessel.





Spirited Length Overall	152 Feet
Hull Length Overall	112 Feet
Length on Deck:	106 Feet
Length At Waterline.	92 Feet
Breadth:	24 Feet, 5 Inches
Draft:	13 Feet
Sail Area	8,323 Square Feet
Tonnage:	120 Gross Tons
Engine:	350 Horse Power Diesel, donated by Cummins Engineering
Crew:	9 Professionals, with 25 trainees while sailing offshore and 65 participants on day trips.
Designer:	George M. McClain
Builder:	James and Tarr Yard, Essex, Massachusetts
Launched:	February 1, 1894

SCHOONER ERNESTINA

1894

JEFFIE M. MORRISSEY

NO.	DESCRIPTION	DATE
	ALTERATIONS	

WOODEN & MARTAN INC.
NAVAL ARCHITECTS MARINE ENGINEERS

SCHOONER 'ERNESTINA'

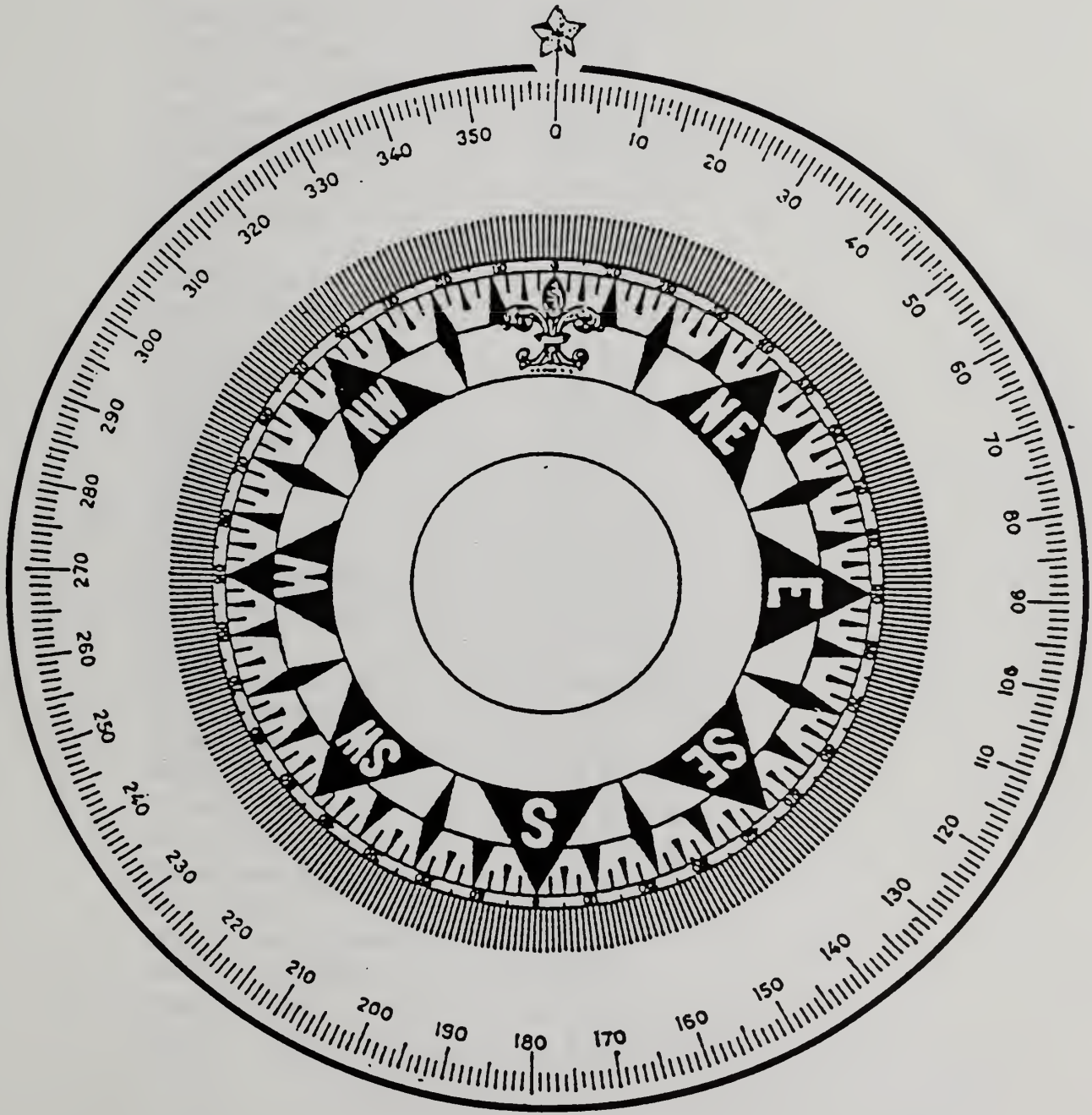
SAIL PLAN

DESIGN No. C-209

DWG NO. 3 SCALE: 1/8"=1'-0"

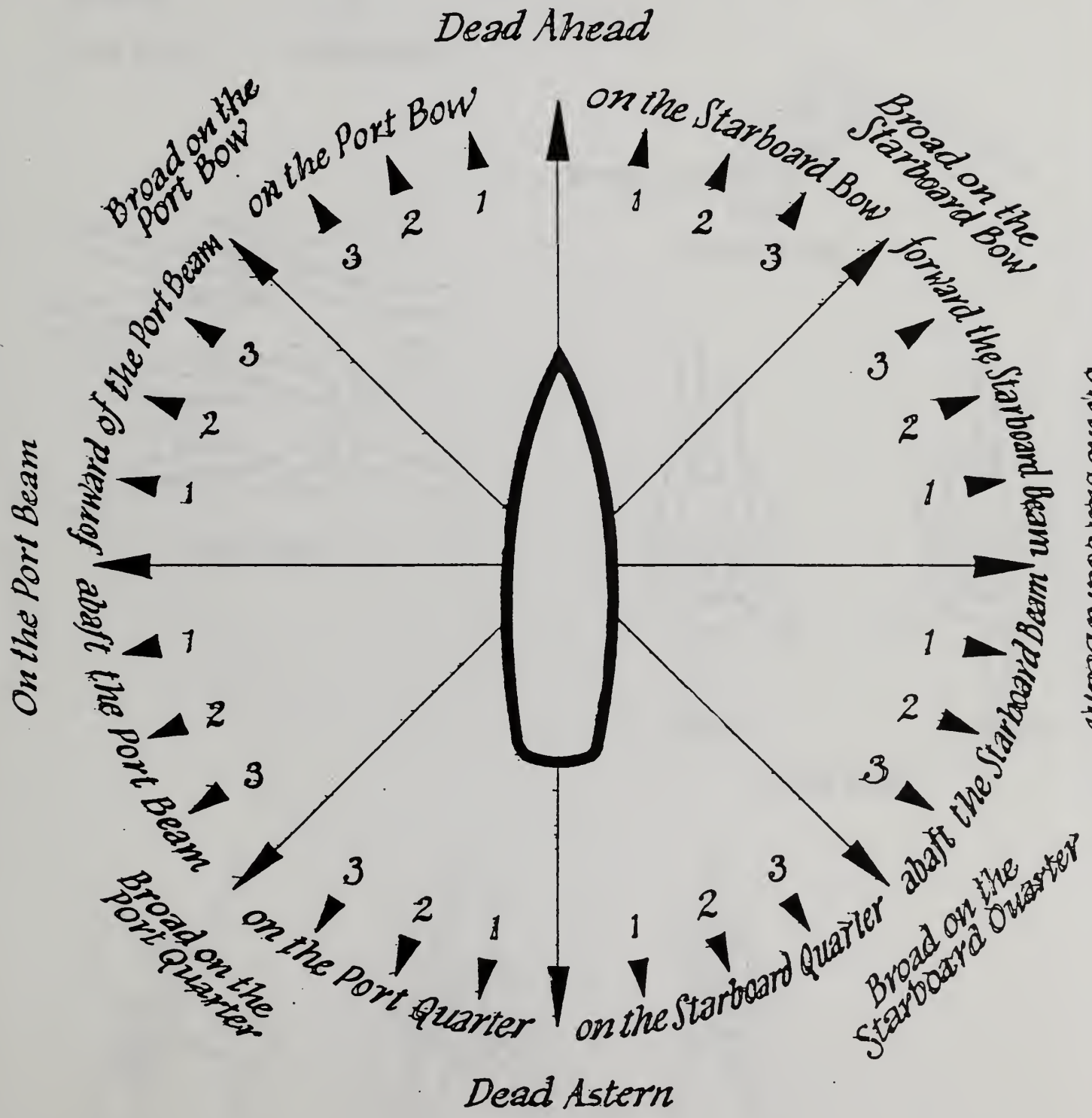
1. Main Mast
2. Main Boom
3. Main Gaff
4. Main Sail (Mains'l)
5. Main Topmast
6. Main Gaff Topsail
7. Fore Mast
8. Fore Boom
9. Fore Gaff
10. Fore Sail (Fores'l)
11. Fore Topmast
12. Bowsprit
13. Jibboom
14. Fore Staysail (JUMBO)
15. Inner Jib
16. Outer Jib

Standard Steering Compass

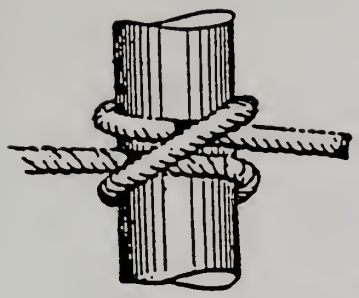


Boxing by Points	Boxing by 1/4 Points
North	N 1/4 E
North by east	N 1/2 E
North north east	N 3/4 E
North east by north	N by E
North east	N by E 1/4 E
North east by east	N by E 1/2 E
East north east	N by E 3/4 E
East by north	N N E
East	N N E 1/4 E
East by south	N N E 1/2 E
East south east	N N E 3/4 E
South east by east	N E by N
South east	N E 3/4 N
South east by south	N E 1/2 N
South south east	N E 1/4 N
South by east	N E
South	N E 1/4 E
South by west	N E 1/2 E
South south west	N E 3/4 E
South west by south	N E by E
South west	N E by E 1/4 E
South west by west	N E by E 1/2 E
West south west	N E by E 3/4 E
West by south	E N E
West	E N E 1/4 E
West by north	E N E 1/2 E
West north west	E N E 3/4 E
North west by west	E by N
North west	E 3/4 N
North west by north	E 1/2 N
North north west	E 1/4 N
North by west	E, etc., etc.
North	S & W to N.

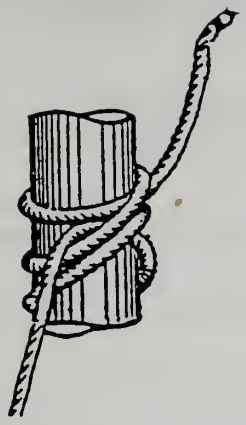
POINT SYSTEM FOR LOOKOUTS



Knots



Clove Hitch



Rolling Hitch

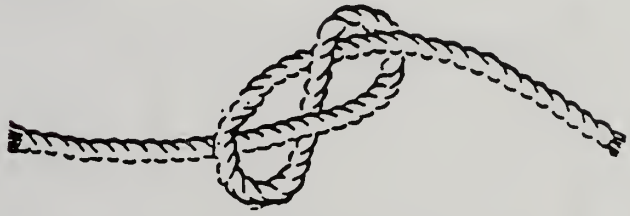
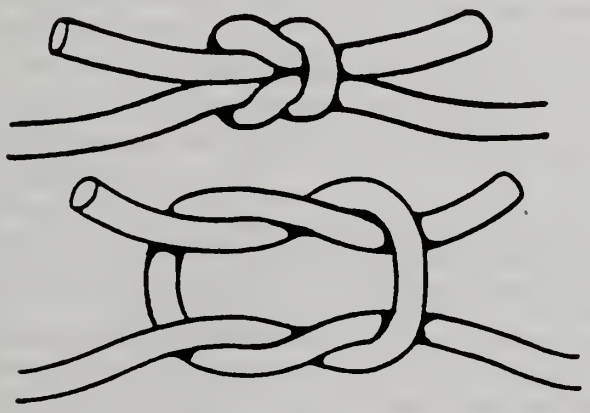
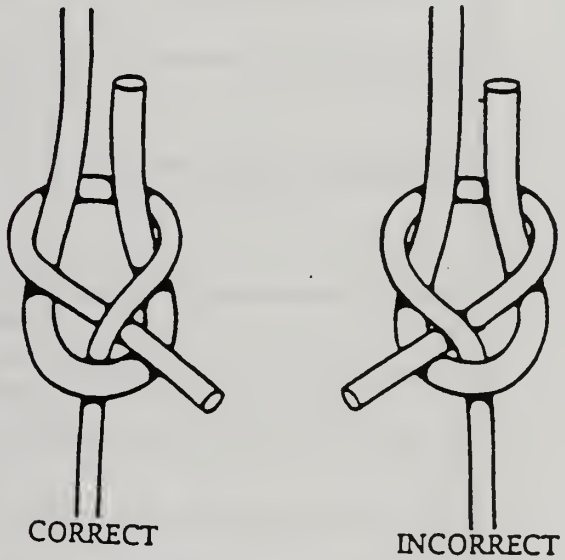


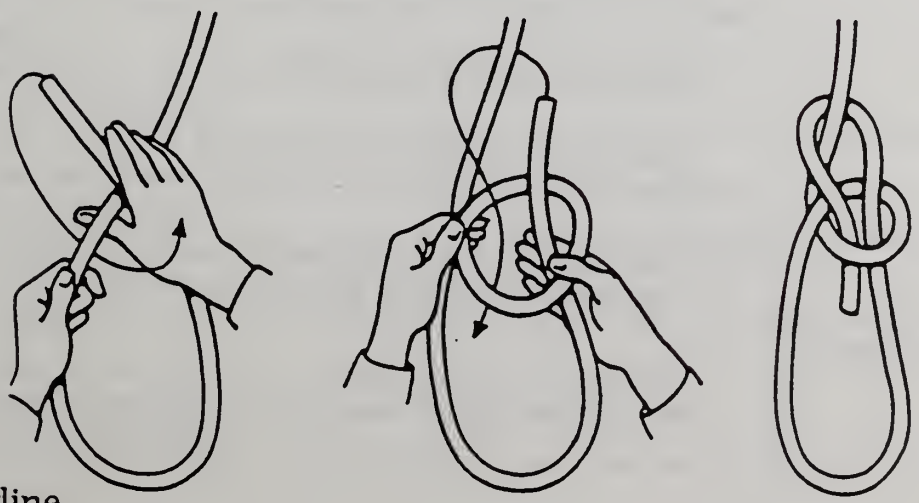
Figure Eight



Reef Knot



Sheet Bend



Bowline

NAUTICAL SCIENCE
LEVEL I - DECKHAND

SAFETY:	Instructor's Initials & Date
Locate the liferafts and lifejackets and explain or demonstrate their use.	
Locate the fire fighting equipment and describe initial action to be taken on discovering fire.	
Describe initial actions for man overboard and demonstrate ability to throw ring or heave line.	
Explain what to do if you fall overboard and how to guard against hypothermia.	
SEAMANSHIP: Describe or explain the terms: fore,aft, amidship, weather, windward, leeward, abaft, abeam, ahead, astern, underway, making way, weighing anchor, mooring, belay, make fast, bend on, steerage way, aground, leeway, reef, sternway, swinging room.	
Name the sails and parts of the ship. (A sail plan and deck plan will be issued aboard your vessel.)	
Describe and be able to to recognize: cat boat, sloop, yawl, ketch, schooner.	
Describe the meaning of these points of sail: running, broad reach, beam reach, close reach, close hauled, gybing, tacking, sailing by the lee, pinching, luffing, bearing away, in irons.	
Demonstrate an ability to: belay a line to a cleat and/or belaying pin with and without a hitch; make up line by coiling and hanging on pin; fake a line or free a line for running; tail, haul, sway and sweat a line.	
Demonstrate an ability to tie: bowline, clove hitch, figure eight knot, reef knot.	
Demonstrate an ability to steer by compass and execute helm orders under supervision.	
Stand watch and demonstrate ability to report hazards to navigation or approaching vessels.	
Report wind direction and barometric reading and explain their significance.	
NAVIGATION (Piloting): Demonstrate ability to recognize common chart symbols, datum, scale, latitude, longitude, distance, direction (true and magnetic).	
Demonstrate use of parallel rules and dividers for plotting dead reckoning (DR).	
Demonstrate use of hand bearing compass (or pelorus or azimuth circle) for plotting a fix under way or for checking position at anchor.	
Demonstrate on chart the course(s) for a portion of the day's run. Locate and describe possible hazards to navigation.	
SEATIME: Complete at least five days of sail training on an ASTA sponsored or approved cruise; stand regular watches and fulfill required duties.	Record in Personal Log

LEVEL I - MARINE SCIENCES (OCEANOGRAPHY)

Section A - Biology and Ecology

(complete any five topics)

	Instructor's Initials & Date
Define plankton, nekton, and benthos. Give examples of each in the ocean. Explain how algae (seaweeds, kelp) differ in some important ways from terrestrial (land) plants.	
Explain and describe what zooplankton and phytoplankton are. Why is each important? Explain how and where you would sample the ocean for plankton.	
Explain how energy from the sun is used and converted to food energy in the ocean. Describe a food chain in the ocean.	
Explain the differences between fouling organisms and boring organisms. Give several examples of fouling organisms, and at least one example of a boring organism. Describe the effects that both fouling and boring organisms can have on ships and wharves and pilings.	
Describe what local commercial fishermen are catching in your area. What equipment (gear) do they use? How much is caught? Explain what happens to the catch when the fishermen return to dock.	
Explain the difference between an estuary, a salt marsh, and an open coast environment, such as a sandy beach or rocky shore. Describe differences in the biology or ecology of these three environments.	
Select one marine organism (an invertebrate or a fish) and describe exactly what it eats and how the food is consumed. If possible, directly observe an animal feeding either in the natural environment or in an aquarium, and describe your observations in a notebook.	

LEVEL I - MARINE SCIENCES (OCEANOGRAPHY)

Section B - Chemistry, Physics and Geology

(complete any five topics)

	Instructor's Initials & Date
Describe the major features of the ocean. Draw a profile of the ocean from the shore to the deep sea trenches, labeling each region, and indicating the approximate depth in both feet and meters.	
Describe the major chemical and physical differences between saltwater and freshwater. If provided only with a weighing balance, how would you determine the approximate amount of salt (the salinity) of a sample of ocean water?	
Describe and explain how tides work. Demonstrate the ability to use and interpret the tide tables, including how to find and apply local correction factors to determine the time and height of the tide at your specific location.	
Describe and explain how waves work. What causes waves? Explain what a seismic wave, or tsunami, is.	
Explain what causes ocean currents. Describe the major local currents in your location. Demonstrate a technique by which you would chart the course of a current. Demonstrate the ability to use published tables to determine local currents.	
Describe how water depths near the shore and in the deep sea are measured. If equipment is available, use a measured sounding line between two marked stations and then draw the depth profile.	
Explain the concept of continental drift (plate tectonics). How does it effect the shape and size of the oceans?	

LEVEL I - AQUATIC SCIENCES (LIMNOLOGY)

Section A - Biology and Ecology

(complete any five topics)

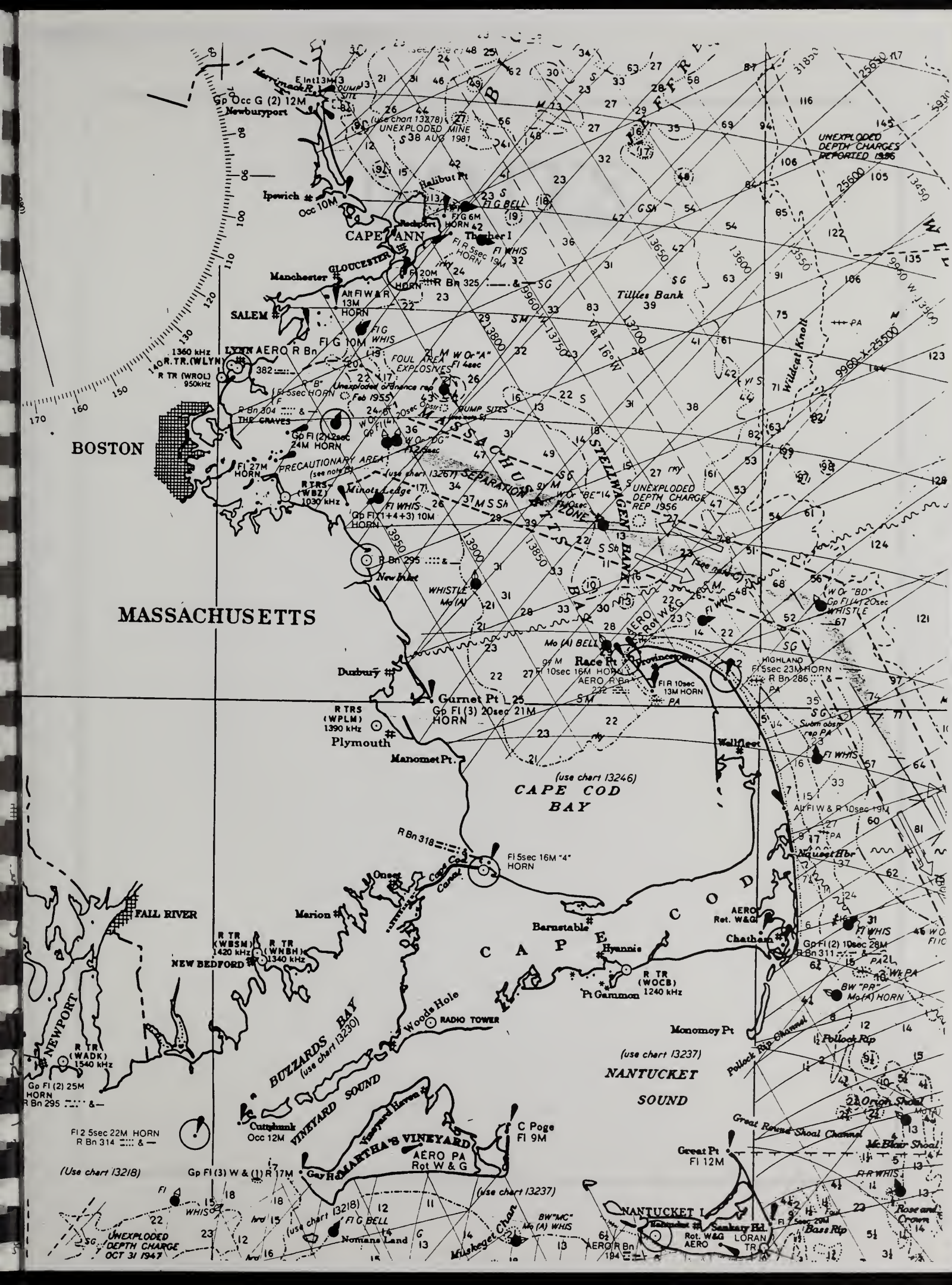
	Instructor's Initials & Date
Define plankton, nekton, and benthos. Give examples of each. Explain how freshwater algae differ from terrestrial (higher) plants.	
Explain and describe what zooplankton and phytoplankton are. Why is each important? Explain how and where you would sample for plankton.	
Explain how energy from the sun is used and converted to food energy in a lake. Describe a typical lake food chain. What are local fishermen catching in your area?	
Explain what fouling organisms are; give several examples. Describe the effects that fouling organisms can have on ships, wharves, and pilings.	
Describe differences of ecology and biology between a pond, a lake, and a marsh.	
Describe the kinds of vegetation in a lake near you. Name different kinds (species) of submerged, floating, and emergent plants.	
Select one freshwater organism (an invertebrate or a fish) and describe what it eats and how the food is consumed. If possible, directly observe an animal feeding, either in the natural environment or in an aquarium, and describe your observations in a notebook.	

LEVEL I - AQUATIC SCIENCES (LIMNOLOGY)

Section B - Chemistry, Physics and Geology

(complete any five topics)

	Instructor's Initials & Date
Describe the major physical features of a lake. Draw a profile of the lake basin from the shore to the bottom. Label each region, and indicate the depth in both feet and meters.	
Describe ways in which lakes are formed. Explain how lakes of different geological origin may differ in their physical and chemical characteristics.	
Describe the major chemical and physical differences between fresh water and salt water.	
Explain the geological and physical differences between a marsh, a pond, and a lake.	
Describe and explain how waves work. What causes waves?	
Describe how water depths are measured. If equipment is available, use a measured sounding line between two marked stations and then draw the depth profile.	
Explain the causes of currents in lakes. What methods would you use to determine the course of a current?	


MASSACHUSETTS
BOSTON
CAPE ANN
Newburyport
Ipswich
Halibut Pt
Rockport
Thacher I
GLOUCESTER
Manchester
SALEM
LYNN
Tillies Bank
Wildcat Knoll
Stellwagen Bank
MASSACHUSETTS BAY
Minots Ledge
Boston Lt
Dunbury
Gurnet Pt
Plymouth
Manomet Pt.
CAPE COD BAY
Race Pt
Provincetown
Wellfleet
Nauset Hbr
Chatham
Pollock Rip Channel
Monomoy Pt
Nantucket Sound
Great Pt
NANTUCKET I
Sankaty Hd
Rose and Crown
Bass Rip
Cape Cod Canal
Onset
Marion
FALL RIVER
NEW BEDFORD
Barnstable
Hyannis
Pt Gammon
Woods Hole
RADIO TOWER
BUZZARDS BAY
(use chart 13230)
NEWPORT
VINEYARD SOUND
Vineyard Haven
MARTHA'S VINEYARD
AERO PA
Rot W & G
Cuttyhunk
Occ 12M
C Poge
Fl 9M
Gay Hd
Nomans Land
Muskeget Chan
Great Rhode Shoal Channel
McBlair Shoal
Orleans Shoal
Fl R Whis
Fl 5sec 20M
Bass Rip
Sankaty Rd
Rot W&G
AERO
LORAN
TR
AERO R Bn
194
(use chart 13246)
(use chart 13237)
(use chart 13218)
(Use chart 13218)
(use chart 13278)
UNEXPLODED MINE
S 38 AUG 1981
UNEXPLODED DEPTH CHARGES REPORTED 1956
UNEXPLODED DEPTH CHARGE OCT 31 1947
UNEXPLODED DEPTH CHARGE REP 1956
FOUL AREA EXPLOSIVES
PRECAUTIONARY AREA
(see note C)
SEPARATION ZONE
(use chart 13267)
DUMP SITES
Unexploded ordnance rep Feb 1955
Swim obsvn rep PA
Wk PA
Gp Occ G (2) 12M
Gp Fl (2) 12sec 24M HORN
Gp Fl (1+4+3) 10M HORN
Gp Fl (3) 20sec 21M HORN
Gp Fl (2) 10sec 28M
R Bn 311
Gp Fl (2) 25M HORN
R Bn 295
R Bn 318
R Bn 325
R Bn 304
R Bn 314
R Bn 286
Fl 5sec 16M "4" HORN
Fl 10sec 16M HORN
Fl R 10sec 13M HORN
Fl 5sec 23M HORN
Fl 2.5sec 22M HORN
Gp Fl (3) W & (1) R 17M
Mo (A) BELL
Mo (A) WHIS
Fl WHIS
Fl G BELL
Fl G 6M HORN
Fl G 10M
Fl R 5sec HORN
Fl 27M HORN
Fl 5sec HORN
Alt Fl W & R 13M HORN
Alt Fl W & R 10sec
Occ 10M
Occ 20M HORN
Fl 4sec
Fl 20sec
Q
Mo (A) HORN
BW "PR"
BW "MC"
R TR (WROL) 950kHz
1360 kHz
140 R.TR.(WLYN)
R TRS (WBZ) 1030 kHz
R TRS (WPLM) 1390 kHz
R TR (WBSM) 1420 kHz
R TR (WNBH) 1340 kHz
R TR (WOCB) 1240 kHz
R TR (WADK) 1540 kHz
AERO Rot. W&G
AERO R Bn
AERO PA
Rot W & G
HIGHLAND
PA
SG
SM
M
Rky
Sh
Obstn
Loran TR
Fl WHIS
Fl 5sec 20M
Fl 10sec 13M HORN
Fl 5sec 16M "4" HORN
Fl 2.5sec 22M HORN
Fl 12M
Fl R WHIS
Fl 5sec 20M
Alt Fl W & R 10sec
Mo (A) WHIS
Mo (A) HORN
Mo (A) BELL
Fl WHIS
Fl G BELL
Fl G 6M HORN
Fl G 10M
Fl R 5sec HORN
Fl 27M HORN
Fl 5sec HORN
Alt Fl W & R 13M HORN
Occ 10M
Occ 20M HORN
Fl 4sec
Fl 20sec
Q
Mo (A) HORN
BW "PR"
BW "MC"
R TR (WROL) 950kHz
1360 kHz
140 R.TR.(WLYN)
R TRS (WBZ) 1030 kHz
R TRS (WPLM) 1390 kHz
R TR (WBSM) 1420 kHz
R TR (WNBH) 1340 kHz
R TR (WOCB) 1240 kHz
R TR (WADK) 1540 kHz
AERO Rot. W&G
AERO R Bn
AERO PA
Rot W & G
HIGHLAND
PA
SG
SM
M
Rky
Sh
Obstn
Loran TR

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